

REMARKS

Reconsideration of the above-identified patent application, as amended herein, is respectfully requested.

This Amendment is in response to the Office Action dated October 31, 2008. Claims 1-8, 11 and 16-23 are pending in this application. Claims 1-8 and 11 are amended, claims 9, 10 and 12-15 are cancelled, and claims 16-23 are newly presented. Of the claims, only claims 1, 17 and 20 are independent.

New Claims

Claims 16-23 are newly presented and for which basis can be found in the application as originally filed. Specifically, support for the amendment to claim 16 can be found in the specification at page 8, lines 26-30. New independent claim 17 includes features similar to amended claim 1 and features supported at page 5, line 25 and page 8, lines 29-31 of the specification. The features of new claim 18 are supported page 11 lines 25-28 of the specification. New claim 19 includes features similar to amended claims 7 and 8. New independent claim 20 includes features similar to amended claim 1 and original claim 12. New claim 21 includes features which are supported in original claim 15 and at page 17 lines 1-7 of the specification. New claim 22 includes features similar to claims 17 and 18. No new matter is introduced. New claims 16-23 are believed to be allowable.

Specification

The Examiner objected to the specification because the features 130X, 140X, 150X, 160X, 130Y, 140Y, 150Y and 160Y are not described. However, in the *Amendment & Response to Office Action* filed on June 23, 2008, a paragraph was added at page 17, line 1 which included these features. Thus, the objection is rendered moot.

Claim Rejections - 35 USC § 112, 1st Paragraph

The Examiner rejected claims 10 and 11 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Claim 10 is cancelled herein. Claim 11 is amended to depend from independent claim 1. The rejection under 35 U.S.C. 112, first paragraph is rendered moot.

Claim Rejections - 35 USC § 112, 2nd Paragraph

The Examiner rejected claims 9-12 under 35 U.S.C. 112, second paragraph, as being indefinite. Claims 9, 10 and 12 are cancelled herein and claim 11 is amended to depend from independent claim 1. The rejection under 35 U.S.C. 112, second paragraph is rendered moot.

Claim Rejections - 35 USC § 102

Claims 1, 2, 5, 7-10, 12, 13 and 15 were rejected under 35 U.S.C. 102(b) as being anticipated by EP 0548752 A1 to Satran et al. It is respectfully submitted that the rejection thereto be withdrawn for the following reasons.

Satran et al. teaches a cutting insert comprising a rectangular base surface (numbered 20 in EP 0 548 752 **B1**), a cutting rake surface 12 and four relief flanks 13. The cutting insert comprises also a cutting edge 15 defined between cutting rake surface 12 and each relief flanks 13. Cutting edge 15 comprises a first and second successive component cutting edges 15a and 15b. First and second component cutting edges 15a, 15b have each an axial rake angle different such as the operation “*is effected with a cutting edge whose axial rake angle is significantly less than the positive axial rake angle of the major portion of the cutting edge lying between $\pm 15^\circ$ and preferably zero.*” (See column 3 lines 11-15.) This allows that the force which tends to detach the cutting tool from the milling machine due to the positive axial rake angle is decreased (column 1 lines 15-23).

The embodiment of Figs. 1 and 7 is explained in more details in relation to Figs. 5 and 6 for defining the location of component cutting edges 15a and 15b. Please be aware that Figs. 5

and 6 are simplified, however, for sake of clarity of the following explanations and are not fully consistent with Fig. 1.

Figs. 5 and 6 of Satran et al. illustrate a first configuration of component cutting edges 15a, 15b with reference to point B being their junction. This first configuration does not correspond to the invention of Satran et al., but is given for purpose of explanation. When viewed from the top as shown in Fig. 5, ABC forms an inward angle due to the fact junction point B is a lower level than cutting rake surface 12 and that the cutting insert is in the shape of a truncated pyramid tapering from cutting rake surface 12 towards the base surface D-D-D-D (in Figs. 5 and 6). During a milling operation, this angle ABC would not produce a unique rectilinear ridge, but two successive ridges inclined with respect to each other as shown in Fig. 8a. (See column 6 lines 4-12 of EP 0548752 A1.) Satran et al. does not want such successive ridges, but a unique rectilinear ridge as shown in Fig. 8b.

In order to achieve such a unique rectilinear ridge as shown in Fig. 8b, Satran et al. teaches a second configuration (which is according to the invention of Satran et al.) consisting of shaping and disposing relief flanks 13 and component cutting edges 15a, 15b so that the intersection of the plane passing through the rotational axis of the milling cutter tool with a surface milled by the cutting edge 15 is substantially rectilinear. (See column 6 lines 16-21 of Satran et al.) This arrangement is named "relief flank compensation" below Fig. 5.

To obtain this result, the relief flank surfaces are rendered angularly convex to the appropriate extent (column 6 lines 45-54 of Satran et al.): see Figure 5 showing component cutting edges 15a, 15b meeting now at junction point E instead of point B. In other words, the cutting inserts have on each lateral side a cutting nose (defined by component the cutting edges 15a, 15b of this lateral side) that protrude somewhat with respect to the remainder of relief flank 13 that extends below that cutting nose (see Fig. 1).

Applicant notes that Figs. 5 and 6 are not fully consistent with Fig. 1 (probably because Figs. 5 and 6 aim only to explain the principle of the relief flank compensation although the description is silent about the discrepancies). Applicant believes that D-D-D-D of Figs. 5 and 6 does not correspond to the base surface 20 of the cutting insert of Fig. 1 (see ref. 20 on Fig. 1 of

EP 0548752 B1). In Fig. 1, D-D would correspond rather to the line delimiting the superior edge of relief flank 13, i.e. the line below component cutting edges 15a, 15b. Fig. 1 is also rather poor in showing that the cutting nose defined by component cutting edges 15a, 15b protrude with respect to relief flank 13 (i.e. the “angularly convex” feature mentioned above).

Turning to the present invention, claim 1 is amended herein to further distinguish the claimed “mutually inclined lateral faces” from the inclined faces of the cutting rake surface 12 that are referenced “X” by the Examiner at section 4 of the Office Action. Amended claim 1 recites, in part:

“...the mutually inclined lateral faces [of an anterior face] extending transversally to the anterior face and joining each anterior face...the mutually inclined lateral faces joining the anterior face at the cutting edges....”

It is clear that the faces referenced “X” by the Examiner do not anticipate these recitations.

Further, Satran et al. teaches that component cutting edges 15a and 15b do not have the same axial rake angle. As a consequence, Satran et al. does not teach that all the cutting edges of the insert are located substantially in a same plane as claimed in amended claim 1. The fact that the cutting edges are not in a same plane is clear in the different figures of Satran et al.

Thus, it is submitted that independent claim 1, as amended herein, is not anticipated by Satran et al. Claims 2-8, 11 and 16 depend from amended claim 1. Therefore, since claim 1 is not anticipated by Satran et al., neither are claims 2-8, 11 and 16. It is respectfully requested that the rejection of the claims under 35 U.S.C. 102(b) be withdrawn.

Newly presented independent claim 17 contains features similar to those recited in amended claim 1. Therefore it is submitted that claim 17 is not anticipated by Satran et al. for the same reasons noted above. Since claims 18 and 19 depend from claim 17, they are not anticipated by Satran et al.

The assembly claimed in new claim 20 comprises an insert with similar features to those recited in amended claim 1 and thus the assembly of new claim 20 is also not anticipated by Satran et al. for the same reasons. Furthermore, the assembly of claim 20 is also not anticipated

by Satran et al. because Satran et al. does not disclose that "...one of said cutting noses protrudes axially from the tool holder..." in view of the recitation "...each cutting nose protruding with respect to a respective one of the lateral framing supporting faces..." (See Fig. 2 of Satran et al. in which component cutting edges 15a, 15b protrudes laterally from the tool holder, but not axially; it is only wiper 14 that protrudes axially, but wiper 14 does not correspond to a cutting nose as defined in claim 20.) Since claims 21-23 depend from claim 20, are not anticipated by Satran et al.

Claim Rejections - 35 USC § 103

Claims 3, 4, 6, 11 and 14 were rejected under 35 U.S.C. 103(a) as being obvious over Satran et al.

The technical field of the invention relates to an indexable cutting insert of a specific category, i.e. those having cutting edges which form an angular-shaped profile for providing a progressive penetration in the material to be machined with respect to the length of the cutting edge. These type of inserts are especially well suited, for example, in drilling applications.

During the milling operation, the angular-shaped profile of the cutting insert allows the material to enter the machine progressively, for example, in drilling applications. More particularly, the insert attacks first the material to machine with only a restricted portion of the angular-shaped cutting edge (i.e. the most advanced part of the angular shaped profile, i.e. the pointed part 131 in the embodiment shown in Fig. 2 of the present application). The active portion of the angular-shaped cutting edge gets progressively larger as the insert penetrates progressively in the material. So the angular-shaped cutting edge gets progressively active up to the whole length of the cutting edge. This provides a centering effect of the indexable specific cutting insert at the start of the milling operation and thus reduces lateral vibrations. Furthermore, the fact that the cutting edge is angularly-shaped results in creating at least two chips (one for each cutting edge component) that are evacuated along different directions, i.e. the two chips are torn away from each other: due to that, the evacuation thereof is easier than if the cutting edge is straight and provides a single chip over the whole length of the cutting edge.

In the prior art, the indexable cutting inserts with angular-shaped profiles were designed as described at page 2, line 11- page 3, line 2 of the specification. However, these indexable cutting inserts have a drawback: it is difficult to place them in the correct position in the seat of the tool holder and clamping thereof is rather poor. This drawback is particularly acute for micro-inserts measuring only a few millimeters per side (see detailed explanations of the drawbacks on page 3, line 3-page 4, line 19 of the specification).

Amended claim 1 recites, in part:

"...the cutting edges being located substantially in a same plane, [and] the cutting edges define cutting noses, each cutting nose protruding with respect to a respective one of the lateral framing supporting faces...."

This results in the fact that the claimed insert is of the category of the inserts having an angular-shaped profile (which is not the case of Satran et al.).

Furthermore, the claimed invention is an improvement over the prior art mentioned in the specification due to the two mentioned features in combination with the following feature:

"...the number of said lateral framing supporting faces is smaller than the number of cutting edges...."

As a result of these three features, the insert is provided with large lateral framing supporting faces in comparison to the prior art described in the specification. Indeed, the number of lateral framing supporting faces in this prior art is the same as the number of cutting edges. As a consequence, in the claimed invention, the lateral framing supporting faces result in a periphery which is overall less rounded than in this prior art. Thus, it facilitates a correct positioning and a good clamping of the insert in the seat of the tool holder.

The cutting insert of Satran et al. does not belong to the category of inserts having cutting edges which form an angular-shaped profile for providing a progressive penetration in the material to be machined with respect to the length of the cutting edge as is the case of the invention. Indeed, as mentioned above, the insert of Satran et al., provides a substantially rectilinear milled section as shown in Fig. 8b. Thus, the cutting insert of Satran et al. does not provide a progressive penetration in the material to be machined with respect to the length of the

cutting edge as is the case of the invention. As a consequence, the teaching of Satran et al. is remote from that of the invention as it deals with another category of cutting inserts.

Thus, the person skilled in the art wishing to design a cutting insert of the mentioned category (i.e. having an angular-shaped profile with the mentioned effects) would not start from Satran et al. which is not part of this category (i.e. which does not provide the wished effects); this would not correspond to a realistic approach of the person skilled in the art and thus this way of reasoning is not acceptable.

Furthermore, if the person skilled in the art would nevertheless take into consideration Satran et al. (although it is not the case as mentioned), he would not be lead to the invention in an obvious way. As mentioned above, the teaching of Satran et al. is to provide the insert with a cutting edges having two components having different angular rake angles. The fact that the cutting edges have angular rake angles different allows ensuring easy entrance of the insert into the metal and thus reducing the force which tends to detach the cutting tool from the milling machine quill. (See column 1, lines 23-27 and column 3, lines 3-25.) But these different angular rake angles results in the fact that the cutting edges are not in a same plane as is the case in the invention. Thus, Satran et al. teaches away from the invention.

In view of the above, it is submitted that independent claim 1, as amended herein, is not obvious over Satran et al. Claims 2-8, 11 and 16 depend from amended claim 1 and accordingly are each directed to patentable subject matter for at least the same reasons as amended claim 1. It is respectfully requested that the rejection of the claims under 35 U.S.C. 103(a) be withdrawn.

New claims 17 and 20 are also not obvious over Satran et al. for the same reasons as amended claim 1. Since claims 18, 19 and 21-23 ultimately depend from claims 17 or 20, they are not obvious over Satran et al.

Favorable reconsideration is earnestly solicited.

Conclusion

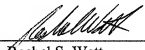
It is respectfully submitted that a full and complete response to the Office Action has been made. The claims are believed to be in condition for allowance. Early and favorable action

is respectfully requested. If the Examiner has any further questions or concerns, the Examiner is invited to contact the Applicant's undersigned attorney/agent.

A Petition for Extension of Time and fee payment for two (2) months is being submitted herewith. If any other fees are occasioned by this Amendment & Response, the Director is hereby authorized to charge them to, or to credit, Deposit Account 08-2442 of the undersigned.

Respectfully submitted,
HODGSON RUSS LLP
Attorneys for Applicants

Date: March 30, 2009

By: 
Rachel S. Watt
Reg. No. 46,186

HODGSON RUSS LLP
The Guaranty Building
140 Pearl Street, Suite
Buffalo, New York 14202-4040
Tel: (716) 856-4000